FUJI FILM INSTALLATION MANUAL

FUJI MINILAB 23s

FILM PROCESSOR FP 350
PRINTER PROCESSOR PP 600

First Edition

INTRODUCTION

The Installation Manual for the FP350 Film Processor and PP600 Printer Processor is divided into two separate volumes: PREINSTALLATION MANUAL and INSTALLATION MANUAL. When installing the FP350 and PP600 units, make necessary preparations according to the former volume and then proceed as directed in this volume.
Before operating the equipment, reference should be made to the Instruction Manuals for the FP350 and PP600.

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1. PREPARATIONS

1.1 TOOLS REQUIRED

Have on hand the following tools.

- Crowbar
- Screwdrivers (regular, Phillips, and stubby)
- Allen Wrench (4 mm)
- Spanner Wrench (24 mm)
- Level
- Scale

1.2 PRELIMINARY STEPS

1. Have necessary chemicals on hand.
2. Prepare control strips for film and paper.
3. Arrange for power supply connections through an electrical contractor.

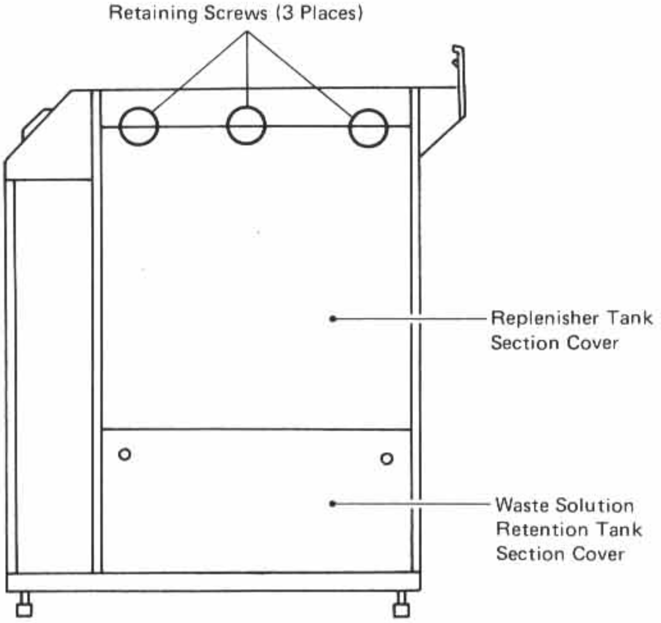
2. FP350 INSTALLATION PROCEDURES

2.1 PROCESSING AND REPLENISHER TANK CLEANING

NOTE: The processing and replenisher tanks should be cleaned before leveling the processor.

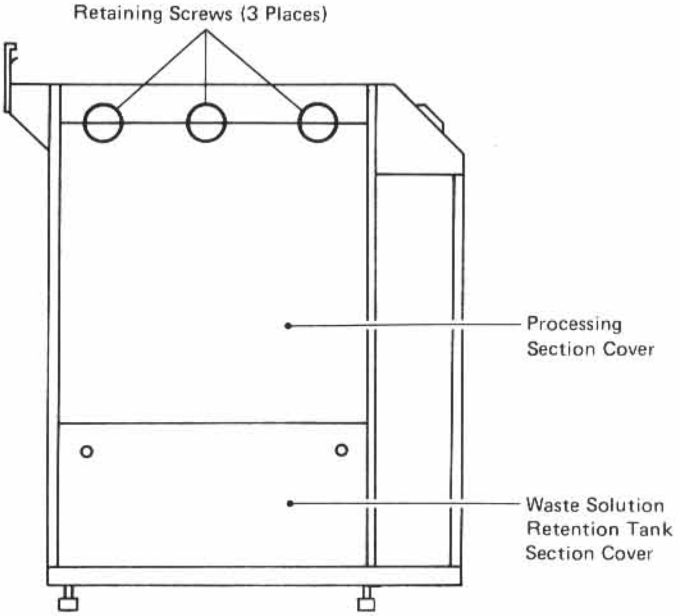
1. Remove the front waste solution retention tank section cover. This cover removal is achieved by pulling the cover top section more than 2 cm forward and then upward.
   NOTE: The top of the waste solution retention tank section cover is retained by a magnetic device and the bottom is engaged by two pins.

Fig. 1 Processor Body Front View


Retaining Screws (3 Places)
Replenisher Tank Section Cover
Waste Solution Retention Tank Section Cover

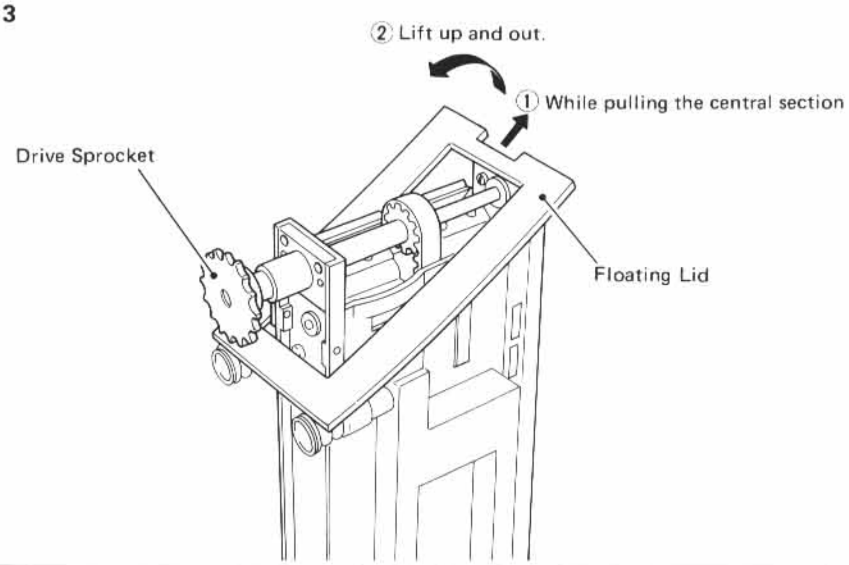
2. Remove the replenisher tank section cover. This requires removing the three retaining screws (T4x6) from the cover top section, pulling the top section more than 2 cm forward, and then lowering the cover.
   NOTE 1: When removing the cover, hold the bottom section with one hand to keep the cover from falling, then hold the latch with the other hand and pull the top section forward.
   NOTE 2: When removing the retaining screws, be sure to keep track of the plastic washers.
   NOTE 3: The cover bottom section is engaged by two pins.
3. Remove the rear waste solution retention tank section cover in the same manner as indicated in step 1.
4. Remove the processing section cover from the rear of the processor in the same manner as indicated in step 2.
   NOTE: The covers removed in steps 1 through 4 are to be reinstalled after Solution Leakage Checks (see section 2.11).

Fig. 2 Processor Body Rear View


Retaining Screws (3 Places)
Processing Section Cover
Waste Solution Retention Tank Section Cover

5. Remove the processing racks from the processing tanks and carry them to the sink for cleaning. When removing the floating lids from the processing racks, first take out the portion located away from the drive sprocket and then pull out the side mounted close to the drive sprocket, as indicated in Fig. 3.

Fig. 3



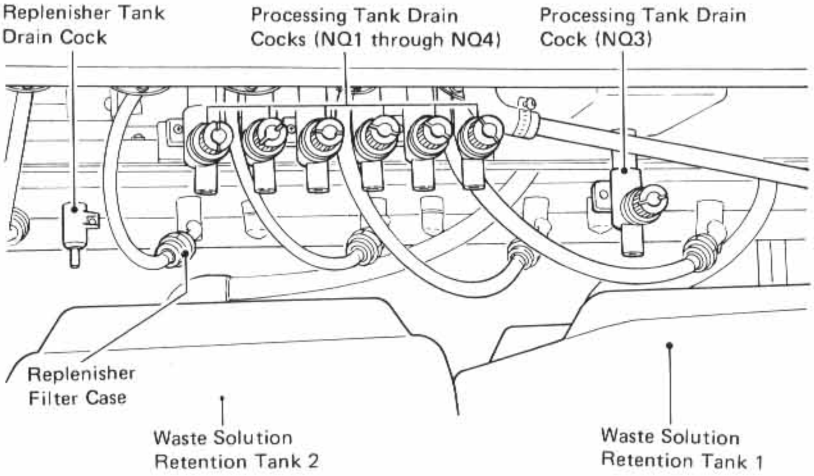
6. Clean the processing tanks with water.
7. Clean the replenisher tanks with water.
8. Remove the covers (solution level sensors attached) from waste solution retention tanks 1 and 2, and then remove the tanks from the processor.

   CAUTION: *When uncovering the waste solution retention tanks, use care not to cut off the solution level sensor cords.*
9. Drain the washings from the processing tanks as directed below.

   Have on hand a bucket or measuring cup that is not more than 25 cm high. Place the bucket or measuring cup under the processing tank solution drain cock, then turn the drain cock handle counterclockwise to drain the tank. When the tank is emptied, close the drain cock.

   NOTE: The 5-liter measuring cup is 25 cm high.

Fig. 4


Replenisher Tank Drain Cock
Processing Tank Drain Cocks (NQ1 through NQ4)
Processing Tank Drain Cock (NQ3)
Replenisher Filter Case
Waste Solution Retention Tank 2
Waste Solution Retention Tank 1

10. Drain the washings from the replenisher tanks as directed below.

    Place the appropriate bucket or cup under the replenisher filter case, then turn the filter case to drain the replenisher tank.

    NOTE: When resetting the filter cases, be sure that they are not loose.
11. Reinstall the waste solution retention tanks.

2.2 INSTALLING THE PROCESSOR

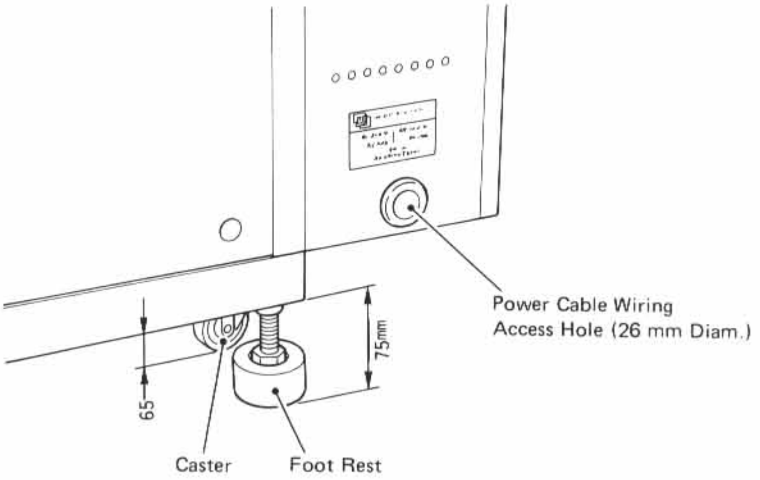
1. Position the processor body in the installation location.

   CAUTION: *The processor is equipped with casters. Therefore, when unloading it from a truck, keep it in a horizontal position.*

2. Position the supplied foot rests under the four leveling screws. Temporarily adjust the height of the processor body frame so that the underside is positioned 75 mm above the floor.

   NOTE: The length of the casters is 65 mm. When the clearance between the frame underside and the floor is temporarily adjusted to 75 mm or more, processor leveling is thereby facilitated.

Fig. 5



3. Place level on top of the film feed section metal frame (see Fig. 6) and replenisher inlet section (see Fig. 7), then level the processor.

   NOTE: Levels should not be used on top of the plastic items such as the processing section and replenisher inlet covers.

Fig. 6

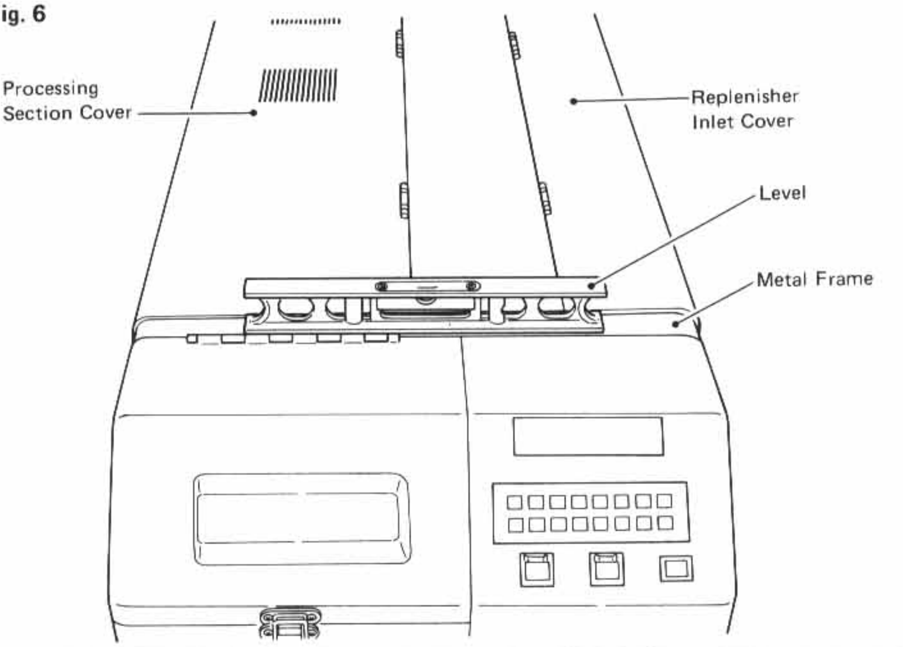
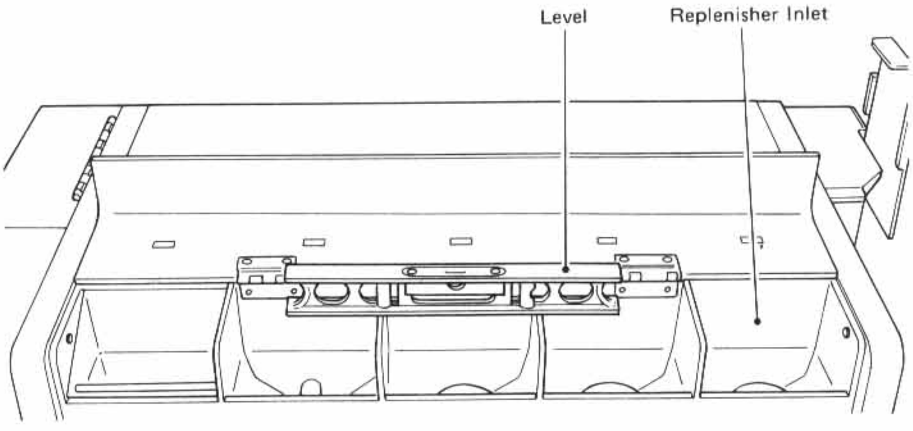


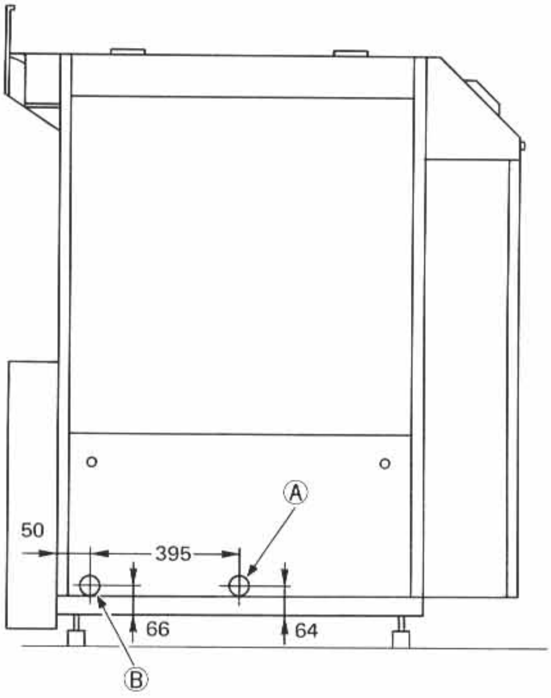
Fig. 7



2.3 PIPING CONNECTIONS (WATER-WASH SYSTEM ONLY)

Fig. 8 FP350 Plumbing Connection Locations

Unite: mm



Waste Water Pipe Differential: More than 100 mm
Waste Water Inclination: More than 1/50

- Water Supply Inlet Ⓐ: 1/2
- Waste Water Outlet Ⓑ: VP20

1. The water supply inlet connection is established through the accessory flexible hose (700 mm metal).
2. The waste water outlet connection is established through the accessory flexible hose (2,000 mm plastic) with said hose retained by the accessory hose retainers.

2.4 ACCESSORY INSTALLATION

The FP350 is supplied with the following accessories. Incorporate them on the processor as specified.

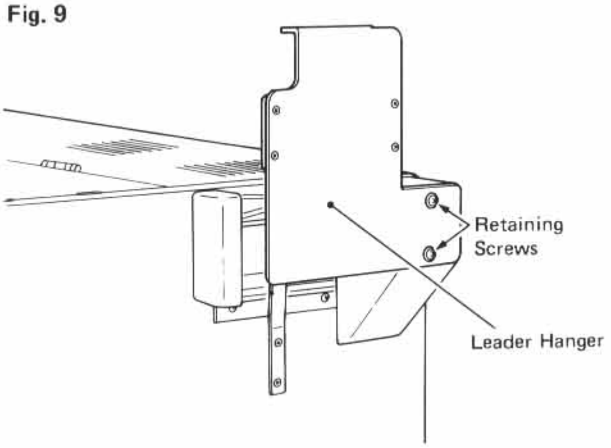
Accessory Name	Q'ty	Comments
Leader Hanger	1	Use the two T4x8 retaining screws attached to the processor body.
Film Receiver	1	Use the two N4x8 retaining screws attached to the processor body.
Floating Ball	72 x 2	These balls are to be used in the NQ1-R and NQ3-R tanks.

NOTE 1: The film receiver should be installed after processing leveling is completed.

NOTE 2: To tighten the film receiver retaining screws, use a Phillips stubby screwdriver (with a short handle).

NOTE 3: Before installing the floating balls, clean them with water.

Fig. 9



2.5 POWER SUPPLY CONNECTIONS

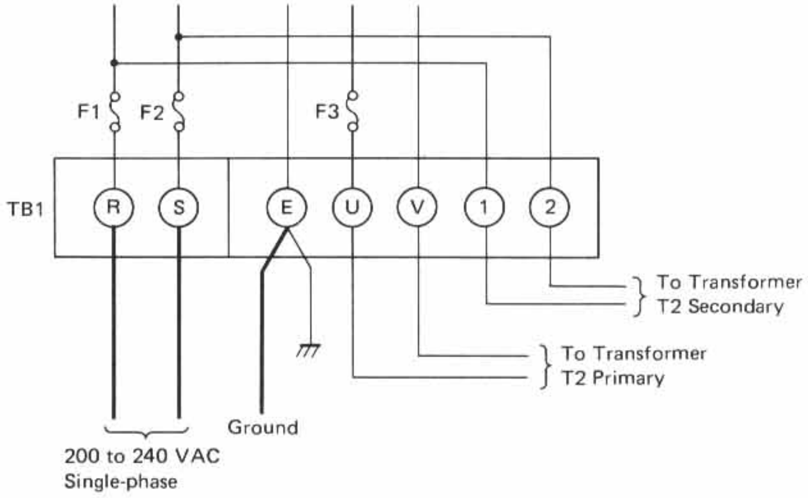
Wiring connections to be made at the time of processor installation are indicated by the thick lines in Fig. 10. When the line voltage used is 230 VAC (single-phase) or lower, it is necessary to retap transformer T2 as indicated in section 2.5.2.

2.5.1 Power Supply Connection Procedures

Connect a 200 to 240 VAC, single-phase power source to electrical control section power supply terminal strip (TB1) terminals R and S. Be sure to ground the processor by connecting the ground wire to terminal E.

NOTE: For making connections, use 4 mm diameter round terminals only.

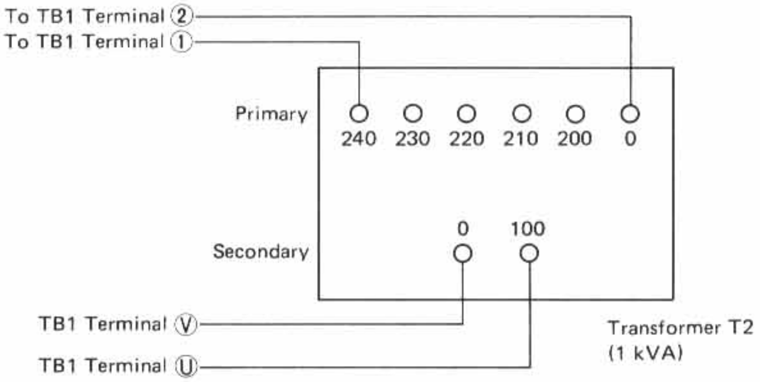
Fig. 10


F1
F2
F3
TB1
R
S
E
U
V
1
2
To Transformer T2 Secondary
To Transformer T2 Primary
Ground
200 to 240 VAC Single-phase

2.5.2 Transformer (T2) Retapping

The T2 transformer primary has been wired prior to shipment for 240 VAC operation, as indicated in Fig. 11. Note the line connecting TB1 terminal ① to the transformer T2 240 V terminal. When the line voltage is 230 VAC or lower, connect it to the appropriate transformer terminal after disconnecting it from the 240 V terminal.

Fig. 11

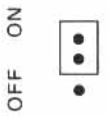
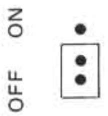


2.5.3 Memory Back Battery Connection and Switch S4 Setup

1. Make sure that the control (CPH) circuit board memory backup battery (item ③ in Fig. 12) is connected. If not, connect it properly.

   ≪ Battery Connection Checkout ≫

   - Check to see how the jumper plug (item ② in Fig. 12) is connected.

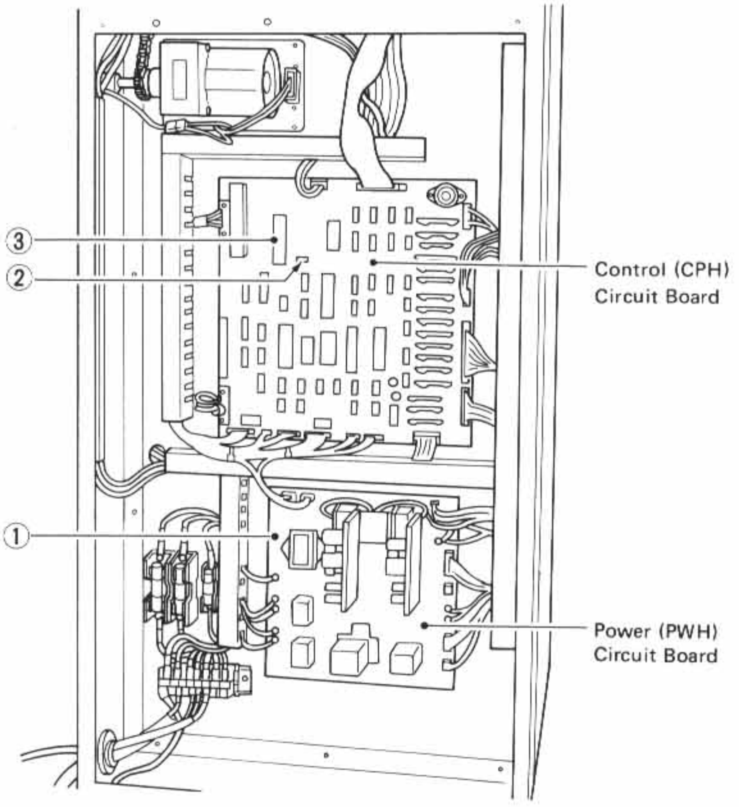
Plug Status	Battery Connection Status
	Connected
	Disconnected

2. Set the PWH circuit board switch S4 (item ① in Fig. 12) in the OFF position.

   NOTE 1: When the switch is placed in the upper position, it is ON. To turn OFF the switch, place it in the lower position.

   NOTE 2: Switch S4 should be ON when the power is turned on, as indicated in section 2.6.

Fig. 12 Electrical Control Section



2.6 POWER TURN-ON

After processor installation or control (CPH) circuit board replacement, turn on the power as directed below.

1. Charge all processing tanks with water and set the racks in their respective positions and

   NOTE: To reduce condition setup time, it is suggested that warm water (at about 30°C or 86°F) be poured into the processing tanks.
2. Pour about 5 liters of water into each replenisher tank.
3. Turn on the power by completing the following steps.

Step	Procedure
1	Ensure that the POWER switch and PWH circuit board switch S4 are set to OFF.
2	Turn ON the main power switch (circuit breaker).
3	Turn ON the POWER switch.
4	Set PWH circuit board switch S4 ON. (This switch should be left ON hereafter.)

CAUTION: *If the weekly timer is not setup when switch S4 is ON, turning ON the main power switch may cause the PWH circuit board relay to chatter and malfunction even when the POWER switch is OFF.*

2.7 CONDITION SETUP AND OPERATIONAL CHECKOUT

Perform condition setup and operational checkout as indicated below.

No.	Step	Procedures
1	POWER switch turn-ON	• Turn ON the POWER switch as indicated in section 2.6.
2	Weekly timer setup	• With mode 7 selected, enter the following data (refer to the FP350 OPERATING INSTRUCTIONS, section 3.5). ① Present time and day ② Processor ON time **NOTE:** It takes about an hour to raise the solution temperature by 20°C (36°F). Therefore, a timer setting should be selected so that the processor is turned ON about an hour before planned processing operations are to start. ③ Processor ON day

≪ Weekly Timer Setup Keying Procedures ≫

No.	Step	Keying Procedures	Display Indication
1	Timer setup mode selection	① MODE , 7 (The designation above means that the MODE and 7 keys should be pressed in sequence.)	7 Timer Set? Y/N
		② YES	7-1 Present Time Set Y/N
2	Present time entry	① YES	Present Time 85 10/01 15:30 ?
		② For instance, 5:30 p.m., Friday, September 12, 1986 would be entered as follows. 8 ↓ 6 **Year** (Enter the last two digits of the Christian year.) 0 9 **Month** (For Jan. to Sep., key in 0 in front of the month to make a 2-digit number entry.) 1 2 **Day of the month** 1 7 **Hour** (Use the 24-hour system.) 3 0 **Minute**	Present Time 86 09/12 17:30 ?

No	Step		Procedures	
	No.	Step	Keying Procedures	Display Indication
			③ YES	0:SU 1:MO 2:TU 3:WE 4:TH 5:FR 6:SA 3 ? ↑ The day of the week is set to Wednesday.
	3	Day entry	① To enter Friday, press the following key. 5	0:SU 1:MO 2:TU 3:WE 4:TH 5:FR 6:SA 5 ?
			② YES	7-2 Timer On Set Y/N
	4	Processor ON time entry	① YES	Timer On Setting 02:00 ON ? ↑ Present setting time is at 2:00 a.m.
			② To enter 8:00 a.m., press the keys as follows. 0 8 0 0 Hour Minite	Timer On Setting 08:00 ON ?
			③ YES	7-3 Day Set 0: OFF 1: ON ?
	5	Processor ON day entry	① YES	SU MO TU WE TH FR SA – ON ON ON ON ON ON ↑ Processor is to be OFF on Sunday only.
			② When the processor is to be OFF on Saturday and Sunday, press the keys as follows. 0 1 1 1 1 1 0	SU MO TU WE TH FR SA – ON ON ON ON ON –
			③ YES	Ready for Processing NQ1: 38.0°C The system returns to the film processing mode (mode 0) as shown above.

<table>
<tr><th>No.</th><th>Step</th><th>Procedures</th></tr>
<tr><td></td><td colspan="2">
<table>
<tr><th>No.</th><th>Step</th><th>Keying Procedures</th><th>Display Indication</th></tr>
<tr><td></td><td></td><td></td><td>NOTE: However, if all preset solution temperatures are not yet reached, the display indicates the following.

Warm-Up State
NQ1: 34.1°C</td></tr>
</table>
</td></tr>
<tr><td>3</td><td>Fan/pump operational checkout</td><td>● Check the following components for proper operations.
① Exhaust Fan (mounted on the processing section cover)
② NQS1/NQS2 Cooling Fan (installed in the rear of processor body)
③ Circulation Pumps.</td></tr>
<tr><td>4</td><td>Water leakage check</td><td>● Ensure that there are no water leaks in the processing tanks and circulation piping system.</td></tr>
<tr><td>5</td><td>Processing solution and dryer temperature setting entry</td><td>● Enter the following settings in submode 5-2 (see the FP350 OPERATING INSTRUCTIONS, section 3.2).

≪ Temperature Settings ≫
<table>
<tr><td>NQ1</td><td>38°C</td></tr>
<tr><td>NQ2</td><td>37°C</td></tr>
<tr><td>NQ3</td><td>37°C</td></tr>
<tr><td>NQS</td><td>35°C</td></tr>
<tr><td>NQ4</td><td>37°C</td></tr>
<tr><td>Dryer</td><td>50°C</td></tr>
</table>
NOTE: The optimum dryer temperature will vary with the installation location and the film type. An initial temperature of 50°C should be selected.</td></tr>
<tr><td>6</td><td>Replenishment rate setting entry</td><td>● Enter the following settings in submode 5-3 (see the FP350 OPERATING INSTRUCTIONS, section 3.3).
<table>
<tr><th></th><th>Replenishment Rate Setting (ml)</th><th></th></tr>
<tr><td>NQ1-R</td><td>45</td><td>26.7</td></tr>
<tr><td>NQ2-R</td><td>20</td><td>32.6</td></tr>
<tr><td>NQ3-R</td><td>30</td><td>32.6</td></tr>
<tr><td>NQS-R</td><td>30</td><td>32.6</td></tr>
<tr><td>NQ4-R</td><td>20</td><td>32.6</td></tr>
</table>
</td></tr>
</table>

No.	Step	Procedures
7	Replenishment pump output	● Make data entries in submode 5-4 (see the FP350 OPERATING INSTRUCTIONS, section 3.4). These data entries are to be made mainly for replenishment pump operational checkouts. When the pump output measures 50 to 110 ml and agrees with the displayed value, press the YES key and proceed. **NOTE:** If the pump output volume is below 50 ml, repeat replenishment pump operation to bleed the system of air.
8	Replenisher piping water leakage check	● Ensure that there are no water leaks in the replenisher piping system.
9	START switch turn-ON	● Perform the following checks. ① Ensure that each processing rack transport belt rotates smoothly. ② Ensure that the dryer fan properly runs. **NOTE 1:** If all preset processing solution temperatures are not yet attained (the display indicates the Heatup State), the processor will not turn ON even with START switch activation. **NOTE 2:** The drive system automatically stops about 13 minutes after START switch activation.
10	Feeding leaders into the processor	1. Feed 3 leaders into the processor. 2. Make sure that none of the leaders are jammed or bent.

11	Processing solution and dryer heater operational checkout	1. Check the heaters for proper operation in mode 5.
		Example) NQ1 Solution Heater
		`NQ1: 28.0°C`
		`Setting: 38.0°C ?`
		When the value (actual temperature) displayed in the upper line is increasing, the NQ1 solution heater is functioning properly.
		2. When dryer temperature verification is completed, the system returns to the film processing mode (mode 0) and the following display indication appears.
		`Ready for Processing`
		`NQ1: 38.0°C`

Operational checkout of the water charged processor is now completed.

2.8 PROCESSING AND REPLENISHER SOLUTION CHARGING

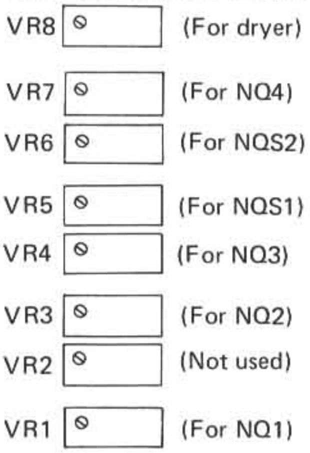
1. Turn OFF the POWER switch.
2. Drain water from the processing and replenisher tanks (see section 2.1).
   IMPORTANT: Close the solution drain cocks immediately after tank draining.
3. Prepare the processing and replenisher solutions as directed in the FP350 CHEMICAL MIXING PROCEDURES, then charge the processor with the prepared solutions.

2.9 CHECKING THE SOLUTION CHARGED PROCESSOR

1. Turn the POWER switch ON, and then back OFF immediately.
   CAUTION: *Air is trapped in the circulation system piping immediately after the processor is charged with solutions. Therefore, if the POWER switch is allowed to remain ON for prolonged periods, undue amounts of air will be expelled at once from the processor causing the tank solutions to undulate and spill from one tank to the next.*
2. After 5 seconds, turn ON the POWER switch again.
3. Ensure that there are no solution leaks in the circulation piping system.
4. Reenter the replenishment pump output volumes in submode 5-4.
   NOTE: The processing solutions collected in the graduated cylinder should be emptied into the associated waste solution retention tanks.
5. Process about 10 rolls of film (which may be fogged). Ensure that the processed film is not scratched or bent.
6. Make accurate measurements of the actual processing solution and dryer temperatures and ensure that there are no differences between these actual values and the temperature controller displayed values. If there are differences, refer to the following section on "Displayed Temperatures and Related Calibration Methods."

≪Temperature Indication Calibration≫

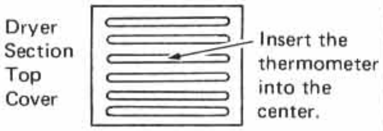
1. Use control circuit board (CPH) trimmers VR1 through VR8 (excluding VR2) for temperature indication calibration.
   Trimmer Locations (CPH Circuit Board)



2. Perform the following steps to effect temperature indication calibration.

Step	Procedure	Display Indication
1. Temperature calibration submode selection	Press the keys as follows. MODE 5 SUB 5 **NOTE:** This submode is used only for temperature indication calibration and therefore not to be used by the user.	**5-5 Temp Calibration**
2. Temperature calibration	Press the YES key.	Indicated Temperature **NQ1 T Temp 39.4 °C** **Y**
(1) NQ1 temperature calibration	1. Measure the NQ1 solution temperature and compare it against the indication. If they do not match, turn trimmer VR1 until the indication agrees with the measured value. **NOTE:** Turing the trimmer clockwise increases the indication, and vice versa. 2. After adjustment, press the YES key and proceed to the next step.	**NQ1 T Temp 38.0 °C** **Y** (Measured temperature: 38.0° C)
	1. Press the YES key to proceed to the next step. (This page is not used and therefore should be skipped.)	**NQ1 S Temp °C** **Y**

Step	Procedure	Display Indication
(2) NQ2 temperature calibration	1. Measure the NQ2 solution temperature and compare it against the indicated temperature. If they do not match, turn trimmer VR3 until the indication agrees with the measured value. 2. After adjustment, press the YES key and proceed to the next step.	NQ2 Temp 36.5 °C Y (Measured temperature: 37.0° C) NQ2 Temp 37.0 °C Y
(3) NQ3 temperature calibration	1. Measure the NQ3 solution temperature and compare it against the indicated temperature. If they do not match, turn trimmer VR4 until the indication agrees with the measured value. 2. After adjustment, press the YES key and proceed to the next step.	NQ3 Temp 37.5 °C Y (Measured temperature: 37.0° C) NQ3 Temp 37.0 °C Y
(4) NQS1 temperature calibration	1. Measure the NQS1 solution temperature and compare it against the indicated temperature. If they do not match, turn trimmer VR5 until the indication agrees with the measured value. 2. After adjustment, press the YES key and proceed to the next step.	NQS1 Temp 34.5 °C Y (Measured temperature: 35.0° C) NQS1 Temp 35.0 °C Y
(5) NQS2 temperature calibration	1. Measure the NQS2 solution temperature and compare it against the indicated temperature. If they do not match, turn trimmer VR6 until the indication agrees with the measured value. 2. After adjustment, press the YES key and proceed to the next step.	NQS2 Temp 35.0 °C Y (Measured temperature: 35.0° C) In the above case, no adjustment is needed.
(6) NQS4 temperature calibration	1. Measure the NQS4 solution temperature and compare it against the indicated temperature. If they do not match, turn trimmer VR7 until the indication agrees with the measured value. 2. After adjustment, press the YES key and proceed to the next step.	NQ4 Temp 37.2 °C Y (Measured temperature: 37.0° C) NQ4 Temp 37.0 °C Y

Step	Procedure	Display Indication
(7) Dryer temperature calibration	1. Turn ON the START switch and wait about 2 minutes. 2. Insert a thermistor type thermometer as indicated below for temperature measurement.  Dryer Section Top Cover Insert the thermometer into the center. **NOTE:** The dryer temperature varies over a ±2 to 3°C (3.6 to 5.4°F) range; therefore, take the central value as the measurement. 3. If the measured temperature is different from the indicated temperature, turn trimmer VR8 until the indication agrees with the measured value.	**Dry Temp 52.3 °C** **Y** (Repeat trimmer adjustment as required.)

2.10 SENSITOMETRIC PERFORMANCE CHECK

1. Perform control strip processing (see the FP350 OPERATING INSTRUCTIONS, section 4.4).

   NOTE: Remove the control strip roll from the refrigerator one hour before processing and allow it to warm to room temperature.
2. Using a densitometer, take readings from the reference strip and the processed control strip.
3. Check for proper sensitometric performance.

2.11 SOLUTION LEAKAGE CHECK

Ensure that there are no solution leaks in the processing or replenisher tank bottom sections or in the circulation system piping.